

REMARKS

Claims 48-66 were pending in this application at the time the present Office Action was mailed. Claims 51, 52 and 57 have been cancelled, and claims 48, 53, 55, 58 and 59 have been amended in the present response. Accordingly, claims 48-50, 53-56 and 58-66 are now pending in this application.

In the Office Action mailed September 8, 2003, claims 48-66 were rejected. More specifically, the status of the application in light of this Office Action is as follows:

- (A) The Information Disclosure Statement filed on December 23, 2002 was alleged to fail to comply with 37 C.F.R. 1.98(a)(2);
- (B) Figure 1 was objected to for failing to comply with a formality;
- (C) Claims 48-66 were rejected under 35 U.S.C. § 112, second paragraph;
- (D) Claims 48, 53 and 55 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,975,994 to Sandhu et al. ("Sandhu") in view of U.S. Patent No. 6,439,986 to Myoung et al. ("Myoung") and U.S. Patent No. 6,500,054 to Ma et al. ("Ma");
- (E) Claim 49 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Sandhu in view of Myoung, Ma, and U.S. Patent No. 6,361,413 to Skrovan ("Skrovan");
- (F) Claims 51 and 52 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sandhu in view of Myoung and U.S. Patent No. 5,775,983 to Shendon et al. ("Shendon");
- (G) Claim 57 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Sandhu in view of Myoung, Shendon and Ma;

(H) Claims 50, 54, 56 and 58 were indicated to be allowable if amended to overcome the Section 112 rejection and rewritten in independent form to include the features of the claims from which they depend; and

(I) Claims 59-66 were indicated to be allowable if rewritten to overcome the Section 112 rejection.

The applicant's attorney wishes to thank the Examiner for engaging in a telephone conference on December 5, 2003. During that telephone conference, the present Office Action, the Myoung and Ma references, and claim 48 were discussed. The following remarks summarize and expand upon the points discussed during the December 5 telephone conference.

A. Response to the IDS Objection

The Information Disclosure Statement ("IDS") filed December 23, 2002 was alleged to fail to comply with 37 C.F.R. 1.98(a)(2). The references cited in this IDS are enclosed herewith for the Examiner's consideration.

B. Response to the Drawing Objection

Figure 1 was objected to for failure to include a prior art legend. Figure 1 has been amended to include the prior art legend. Accordingly, the objection to the drawings should be withdrawn.

C. Response to the Section 112 Rejection

Claims 48-66 were rejected under 35 U.S.C. § 112, second paragraph. Claims 48, 53, 55, 58 and 59 have been amended to clarify that the carrier assembly carries the end-effector, without narrowing these claims. Accordingly, the Section 112 rejection of claims 48, 53, 55, 58 and 59 should be withdrawn.

Claims 51, 52 and 57 have been cancelled and therefore the Section 112 rejection of these claims is now moot.

Claims 49, 50, 54, 56 and 60-66 depend from claim 48, 53, 55 or 59. Accordingly, the Section 112 rejection of claims 49, 50, 54, 56 and 60-66 should be withdrawn.

D. Response to the Section 103(a) Rejection of Claims 48, 53 and 55

Claims 48, 53 and 55 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sandhu in view of Myoung and Ma. The Examiner alleges that Myoung discloses a conditioner having a plurality of microstructures that are arranged in a pattern corresponding to a desired pattern of microfeatures on a contact surface of a processing pad.

1. Claim 48 is Directed to a System for Restoring a Contact Surface of a Processing Pad, Including an End-Effector Having a Plurality of Microstructures Arranged in a Pattern Corresponding to a Desired Pattern of Microfeatures on the Contact Surface of the Processing Pad

Claim 48 is directed to a system for restoring a contact surface of a processing pad used in processing microelectronic workpieces. The system includes a table for supporting the processing pad, an end-effector carrier assembly with a holder positionable over the table, and an end-effector carried by the holder. The end-effector includes a conditioning surface and a plurality of microstructures on the conditioning surface. The conditioning surface is configured to engage the contact surface of the processing pad. The microstructures are arranged in a pattern corresponding to a desired pattern of microfeatures on the contact surface of the processing pad. The microstructures can be raised elements projecting from the contact surface and/or depressions in the contact surface. Accordingly, the system is expected to reform the microfeatures on the contact surface of the processing pad without abrading material from the pad. Thus, the life of the processing pad is enhanced because abrasion wears down areas of the pad, such as raised features, depressions, and/or trenches.

2. Sandhu Discloses a Conditioning System Including a Carrier Assembly with a Conditioning Element

Sandhu discloses a conditioning system for use with a polishing pad. The system includes a carrier assembly with an arm positionable over the polishing pad, a conditioning element coupled to the arm, and an actuator coupled to the arm to engage the conditioning element with the surface of the polishing pad. The conditioning element can be an abrasive disk or brush. The conditioning system moves the conditioning element relative to the polishing pad to abrade the pad surface and/or otherwise remove waste matter from the pad.

3. Myoung Discloses the Conditioner Including a Substrate Having a Plurality of Geometrical Protrusions

Myoung discloses a conditioner for a polishing pad that includes a substrate having a plurality of geometrical protrusions and a diamond layer over the geometrical protrusions. The geometrical protrusions have a uniform height to purportedly obtain a highly effective cutting ability. The diamond layer strengthens the structural integrity of the cutting surface.

4. Ma Discloses a Conditioner Having a Non-Uniform Conditioning Surface with a Plurality of Conditioning Elements

Ma discloses a conditioner having a non-uniform conditioning surface with a plurality of conditioning elements. The conditioning surface has a first section with a first cutting rate and a second section with a second cutting rate that is less than the first cutting rate. The individual conditioning elements in the first section can have a different shape and/or size than the individual conditioning elements in the second section. Moreover, the conditioning elements can be arranged in different patterns in the first and second sections so that the sections cut the pad at different rates.

5. The Office Action Fails to Establish a *Prima Facie* Case of Obviousness for Claim 48

The MPEP requires the Examiner to set forth a *prima facie* case of obviousness. If the Examiner does not produce a *prima facie* case, the applicant is under no

obligation to submit evidence of nonobviousness. A *prima facie* case requires the Examiner to provide, *inter alia*, prior art references that disclose all the elements of the claim and a basis for combining or modifying the references. (MPEP § 2143) For the reasons discussed below, the Office Action fails to establish a *prima facie* case of obviousness with respect to claim 48.

Sandhu, Myoung, and Ma fail to disclose all the elements of claim 48. For example, Sandhu, Myoung, and Ma do not disclose a system for restoring a contact surface of a processing pad including an end-effector having "a plurality of microstructures on the conditioning surface, the microstructures being arranged in a pattern corresponding to a desired pattern of microfeatures on the contact surface of the processing pad," as recited in claim 48. Myoung's geometrical protrusions are not arranged in a pattern corresponding to a desired pattern of microfeatures on the processing pad. The geometrical protrusions of Myoung are arranged to abrade and cut the surface of the pad, and bear no relation to a desired pattern of microfeatures on the pad. Moreover, Ma's conditioning elements are not arranged in a pattern corresponding to a desired pattern of microfeatures on the processing pad. The conditioning elements of Ma are arranged in sections of the conditioner to cut the pad at different rates. Consequently, the applied references fail to disclose each and every feature of claim 48.

Moreover, there is no motivation or suggestion to modify Myoung's or Ma's conditioner to arrange the geometrical protrusions or conditioning elements in a pattern corresponding to a desired pattern of the microfeatures on processing pads. Myoung's and Ma's devices condition processing pads by moving the protrusions and elements, respectively, laterally across the processing pad to abrade the pad. Consequently, the arrangement of protrusions and elements bear no relation to the desired pattern of microfeatures on the pad. Therefore, the Office Action fails to establish a *prima facie* case of obviousness under Section 103(a) because: (a) the applied references fail to disclose all the features of claim 48; and (b) there is no motivation to modify Myoung's

or Ma's conditioner to include the features of claim 48. Accordingly, the Section 103(a) rejection of claim 48 should be withdrawn.

Independent claims 53 and 55 have, *inter alia*, features generally similar to those included in claim 48. Accordingly, the Section 103(a) rejection of claims 53 and 55 should be withdrawn for the reasons discussed above and for the additional features of these claims.

E. Response to the Section 103(a) Rejection of Claim 49

Claim 49 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Sandhu in view of Myoung, Ma, and Skrovan. Skrovan and the claimed invention were, at the time the invention was made, subject to an obligation of assignment to Micron Technology, Inc. Skrovan, therefore, cannot be used as a reference to support a Section 103(a) rejection of the claimed invention as expressly provided in 35 U.S.C. § 103(c) and MPEP § 706.02(l)(1). The rejection of this claim under Section 103(a) is improper and should be withdrawn.

F. Response to the Section 103(a) Rejection of Claims 51 and 52

Claims 51 and 52 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sandhu in view of Myoung and Shendon. Claims 51 and 52 have been cancelled in this response and therefore rejection of these claims is now moot.

G. Response to the Section 103(a) Rejection of Claim 57

Claim 57 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Sandhu in view of Myoung, Shendon, and Ma. Claim 57 has been cancelled in this response and therefore the rejection of this claim is now moot.

H. Indication of Allowable Subject Matter

Claims 50, 54, 56 and 58 were indicated to be allowable if amended to overcome the Section 112 rejection and rewritten in independent form to include the features of the claims from which they depend. Claim 58 has been amended accordingly and should now be allowed. Claims 50, 54 and 56 have not been rewritten in independent

form because their respective independent claims should now be in condition for allowance for the reasons described above.

I. Indication of Allowable Subject Matter

Claims 59-66 were indicated to be allowable if rewritten to overcome the Section 112 rejection. Claim 59 has been amended accordingly, and therefore, claim 59 should be allowed. Claims 60-66 depend from claim 59. Therefore, claims 60-66 should now be allowed.

Although the applicant's attorney agrees with the Examiner's conclusion that many of the claims in this application are allowable, the applicant's attorney notes that the claims may be allowable for reasons other than those identified by the Examiner and does not concede that the Examiner's characterization of the terms of the claims and the prior art are correct.

J. Conclusion

In light of the foregoing amendments and remarks, all of the pending claims are in condition for allowance. Applicant, therefore, requests reconsideration of the application and an allowance of all pending claims. If the Examiner notices any informalities in the claims, he is encouraged to contact David Dutcher at (206) 359-6465 to expediently correct any such informalities.

Respectfully submitted,

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